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APPLICATION NO	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO
09 884,625	06 19 2001	Johann Engelhardt	LASP-114-US-	3038

7540

01 30 2003

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EXAMINER

JOHNSTON, PHILLIP A

ART UNIT PAPER NUMBER

2881

DATE MAILED: 01 30 2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/884,625

Applicant(s)

ENGELHARDT ET AL.

Examiner

Phillip A Johnston

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

- A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on _____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-25 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-25 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 19 June 2001 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____
- 4) ☐ Interview Summary (PTO-413) Paper No(s) _____
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other

Detailed Action

Claims Rejection – 35 U.S.C. 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which the subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. Claims 1-9, and 19-25 are rejected under 35 U.S.C. 103(a) as being unpatentable over Jörgens (052), in view of Holdener (990), in further view of Ammann (258).

Jörgens (052) discloses a laser scanning microscope of the inverted type. Sensors are also provided on a pivotable arm that supports a housing. The housing holds a transmitted light condensor and folding mirror above the object stage, and protects against inadvertently looking into the laser light. The signals from both sensors are connected together in the sense of a logic AND circuit, The laser beam path is closed by the shutter (and the laser is released) only when both sensors signal a safe state. See Abstract. Furthermore, sensors are provided on the pivot joint of the arm and are coupled to the shutter for interruption of the laser beam. When the arm is

pivoted away from the object, the laser is also interrupted. The sensors on the pivot joint and on the reflected light reflector slide are coupled to the shutter control via a logical AND gate, so that the laser beam is only released with the sensor of the reflector slide and the sensor of the pivot joint simultaneously produce a signal indicating the safe position. See Column 3, line 37-45. The position of the fully reflecting mirror (10) on the reflector slide (9), is monitored by a sensor. This sensor, in this case, consists of two magnets (21) that are received in two small bores in the reflector slide (9), and two probes (20) opposite the magnets, received on the guide of the reflector slide (9). If the magnets (21) and the probes (20) are positioned opposite each other, the resulting signal triggers a shutter in the beam path of the laser light and clears the beam path. Since only the switching position of the fully reflecting mirror (10) is monitored by magnets (21), the laser beam path remains interrupted for any other switching position of the reflector slide (9) or when this reflector slide (9) is not present. This sensor prevents eye damage when looking into the ocular tube (3). Including two magnets in the design of the safety device permits the failure of a sensor to be detected, so that the laser beam is interrupted even when a sensor fails to function. See Column 4, line 21-61. In particular, other sensor types can be used to produce the shutter signals. For example, microswitches or simple electrical contacts can be used. See Column 6, line 20-22.

Jörgens (052) as applied above does not disclose the use of a mechanical interruption device. Holdener (990); however, discloses a safety shutter that includes a two position optical element actuator device 100, with a mounting base 102, a driver

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bar 108 having first and second ends, and an actuation arm 116 having first and second ends. The first end (driven end) 106 of driver bar 108 is connected via output rod 104 to mounting base 102. The second end (working end) 114 of driver bar 108 is mechanically linked to the actuation arm 116, by a bearing 118 that slides within an elongated slot 120 in the first end 122 (driven end) of actuation arm 116. Powered means 140 applies a torsional restraining force to driver bar 108 via output rod 104 to hold driver bar 108 in a first position. Powered means 140 is preferably a rotary actuator, but may also include electric motors, electric engines, rotary solenoids and electromagnets. See Column 4, line 26-40, and Figures 1-7.

Jörgens (052) in view of Holdener (990), as applied above does not disclose a mechanical interruption device that has an opening formed therein. However, it is well known in the art to use shutters with apertures for monitoring and detection purposes in laser optical systems, as recited in Claim 3. See for example Ammann (258).

Therefore, it would have been obvious to one of ordinary skill in the art that the Jörgens (052) scanning laser microscope could be modified with the mechanical safety shutter of Holdener (990) to provide additional protection against laser damage, if so desired.

Jörgens (052) in view of Holdener (990), as applied above does not disclose a mechanical interruption device that has an opening formed therein. However, it is well known in the art to use shutters with apertures for monitoring and detection purposes in laser optical systems, as recited in Claim 3. See for example Ammann (258).

3. Claims 11-18 are rejected under 35 U.S.C. 103(a) as being unpatentable over Jörgens (052), in view of Holdener (990), in further view of Ammann (258), as applied to Claims 1-10 and 19-25 above, in still further view of Wilson (002).

Wilson (002) discloses that an optical system may be dynamically balanced, that is balanced under conditions of angular, as opposed to linear, acceleration forces. It may be shown mathematically that, for the angular momentum of the system to be independent of the angular position of the mirror 10, the inertia J_a of the actuator about its axis of rotation is given by the expression:

$$J_a = \frac{J_m + J_b}{N_a^2}$$

where J_m and J_b are the inertias of the mirror 10 and the balance mass 20 about their respective axis of rotation and N_a is the velocity ratio relating the movement of the mirror 10 to that of the actuator arm 14. At the position of the optical system where the actuator arm 14 is in its centre position the ratio N_a is given by:

$$N_a = L_{m1}/L_{ma}$$

where L_{m1} and L_{ma} are the lengths shown in FIG. 2. Hence it is possible to calculate the necessary inertia of the actuator 13, and actuator shaft to add one or more balance discs, as shown in broken line at 25 in FIG. 1, to the actuator shaft to increase the actuator inertia to the necessary value to achieve dynamic balance. See Column 3, line 20-43, and Column 4, line 1-2.

Therefore it would have been obvious to one of ordinary skill in the art that one could design a laser interruption device and use the momentum compensation system in accordance with the teaching of Wilson (002) to provide a dynamically balanced

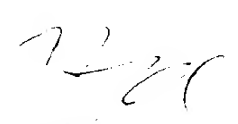
system and further reduce the amount of vibration to a minimum when the shutter is moved from a first to second position.

Conclusion

4. Any inquiry concerning this communication or earlier communications should be directed to Phillip Johnston whose telephone number is (703) 305-7022. The examiner can normally be reached on Monday-Friday from 7:30 am to 4:00 pm. If attempts to reach the examiner by telephone are unsuccessful, the examiners supervisor John Lee can be reached at (703) 308-4116. The fax phone numbers are (703) 872-9318 for regular response activity, and (703) 872-9319 for after-final responses. In addition the customer service fax number is (703) 872- 9317.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703 308 0956.

PJ
January 24, 2003


JOHN R. LEE
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TECHNOLOGY CENTER 2800